Vulture Funds and Fresh Start Accounting of Firms Emerging from Chapter 11 Bankruptcy

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Abstract:

We study how distress-oriented hedge funds (vulture funds) play an important role in the fresh start valuation of firms emerging from Chapter 11 reorganization. We find that loan-to-own vultures acquire debt positions of the distressed firm that grant dominant power in the bankruptcy negotiations, and they then use the discretion allowed by fresh start accounting to introduce valuation bias in their favor. We show that the strategic influence over fresh start values can create opportunities to increase vulture investors' returns at the expense of other claim holders.

Keywords: distress, bankruptcy, valuation, hedge fund, reporting discretion.

JEL: G14, G23, G33, M41

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1. INTRODUCTION

Active hedge funds have an important role in the resolution of Chapter 11 bankruptcies. They can influence the reorganization negotiations and shift control rights in their favor (Hotchkiss and Mooradian, 1997; Kahan and Rock, 2009; Jiang et al., 2012; Lim, 2015; Ivashina et al., 2016). However, *how* distress-oriented hedge funds achieve that influence is unclear. While finance research underlines the positive effects of hedge fund involvement (e.g., quick recovery from bankruptcy, greater debt reduction, and more efficient contracting, Lim, 2015), legal studies argue that distressed-oriented hedge funds (known as vulture funds) obtain excessive control at the expense of other stakeholders (Baird and Rasmussen, 2010; Harner, 2011; Harner et al., 2014). We focus on vulture funds that pursue a loan-to-own strategy in which the fund purchases distressed debt with the intention of converting it into equity of the emerging firm; we add to this debate by showing a particular accounting mechanism that vulture investors are likely to use to preferentially influence the value of the firm at emergence from Chapter 11: fresh start accounting (FS) valuation. The FS value is important for the allocation of rights because it determines the value of the new firm to be divided among various stakeholders. The estimate of FS value affects the bankruptcy negotiations on the amounts and form (i.e., cash, new debt, or new equity) of the distributions to the claimants, which in turn determines the approval of the reorganization plan by the court and ultimately the success of the reorganization.

Fresh start accounting rules require that all assets of the reorganized firm are measured based on estimates of fair value, and recorded as opening balances in the firm's financial

statements upon emergence from Chapter 11.[1] Because most assets are not actively traded in liquid markets (e.g., intangible assets, property) their fair values are based on forecasts rather than on arm's-length transactions which gives rise to considerable reporting discretion. The forecasts of fresh start values are produced by management with the help of experts, and as a result, incorporate managers' private information and the interests of influential claimants (Franks and Torous, 1989; Gilson et al., 2000; Lehavy, 2002). Thus, the discretion facilitated by FS accounting rules opens the possibility for influence over valuation by claimants with a significant say over the restructuring process.

Vulture funds can obtain that significant influence by acquiring a critical position in the debt structure of the distressed firm: the fulcrum debt. The fulcrum is the point in the firm's capital structure at which the value of the firm on exiting bankruptcy first fails to cover outstanding claims (Moyer et al., 2012). Fulcrum creditors have maximum voting power in the reorganization plan that defines the fresh start accounting value of the firm. The reason for this power is that while the most senior (unimpaired) creditors are paid in full and hence their approval of the plan is automatic, the intermediate fulcrum creditors which are only partially paid have a presumptive right to the equity of the newly organized firm. Any claims junior to the fulcrum get little or nothing in the new firm and so it is assumed they will reject the plan, making their vote unnecessary. Thus the vote of the fulcrum creditors is the only one that matters.

However, the exact fulcrum point is not known until the final reorganization plan is approved by the court. This uncertainty gives vulture investors incentives to influence the FS

[1] The fresh start accounting rules are defined in Financial Accounting Standards Board (FASB), Accounting Standards Codification Topic 852. Under the rules, firms emerging from Chapter 11 are required to estimate and report the fair values of assets and liabilities of the reorganized entity. The amounts of the assets and liabilities of the predecessor firm are set to zero and the new fair values (i.e. fresh start values) are reported in the successor's accounts. For a comprehensive example of fresh start accounting see Lehavy and Udpa (2011).

valuations so that the final value of the firm guarantees them increased control rights at exit from bankruptcy. For example, if their claim is of relatively high seniority and the FS value is too high, they will only receive the honoring of the claim with no opportunity to convert it into equity. Thus, we argue that a vulture fund acquiring a relatively high seniority claim has a strong preference for lower FS values because the lower priority debtors then receive little or no share in the equity of the emerging firm, while the vulture fund ends up with a larger proportion of the equity. If in fact the firm value is significantly higher a short time after bankruptcy than the FS value on the date of exit from bankruptcy, there is a potential windfall for the owners of the emerging firm. An immediate consequence of this strategic influence over FS value is the cancellation of the interests of the original shareholders and junior debtholders. On the other hand, if vulture funds acquire debt of relatively low seniority, they will favor higher FS valuations to avoid the risk of extinguishing the claim and to ensure that it is partially rather than fully impaired. The case of Visteon which filed for Chapter 11 in May 2009 illustrates how vultures can strategically interfere with FS valuation. Some vulture investors bought a large portion of unsecured junior debt with almost zero recovery value in the initial reorganization plan. They voted against the initial plan and the court had to overrule it. The plan was amended five times, and the estimated FS value changed from about $1 billion to about $2.5 billion in the final plan approved in October 2010. The emerging value of the firm granted vulture investors 16% ownership in the firm. Three months later, Visteon's market value jumped to about $3.5 billion.

We empirically test our conjectures for a hand-collected sample of Chapter 11 firms, in the period between 1994 and 2011. We start by comparing the FS value of the firm's assets at exit from Chapter 11 bankruptcy (v_e) with the value of assets at filing for bankruptcy (v_f). We find that when vulture funds enter the capital structure of the target firm at relatively high seniority positions, the firm experiences a downward FS valuation in 67% of cases (i.e., v_e - v_f

< 0). In contrast, when vulture investors hold low seniority claims, 95% of the firms exit bankruptcy with upward FS valuation (i.e., $v_e - v_f > 0$). The upward (downward) FS valuation is mostly achieved through the increase of the fair value of intangible assets (i.e. decrease of fair value of property, plant and equipment). We also document the FS misvaluation at emergence date measured as the difference between the FS value of assets and the market value of the firm ($v_e - v_{m,e}$). We find that the fresh start value is understated by 5.5% on average relatively to the market value. More importantly, the FSmisvaluation significantly increases (i.e., the understatement is grater) with the presence of vulture fund investors. The multivariate analysis that controls for other factors affecting vulture funds' investment decisions confirms the significant relations between the debt positions held by vulture funds during bankruptcy and the over or under valuation of the firm at exit from bankruptcy.

Vulture funds must ensure cooperation from management to exert influence over FS valuation. The estimations of the fresh start value of assets are typically made by experts but managers retains substantial involvement in valuations because they possess better knowledge about the true value of the assets and they remain in control of the firm's operations (Franks and Torous, 1989; Wruck, 1990; Lehavy, 2002). Creditors on the other hand, have little external information about the value of business and its future prospects, and consequently rely on management estimates as the basis to negotiate the fresh start value of the firm (Gilson et al., 2000). Vulture funds are known for actively controlling management and the board, and often take the role of CEO or chairman of the distressed firm (Hotckiss and Mooradian, 1997; Kahan and Rock, 2009). Managers have incentives to cooperate with active vultures to avoid the stigma of being associated with long or unsuccessful reorganizations and to increase the probability of keeping their managerial positions (Brav et al., 2008; Bharat et al., 2014). If the loan-to-own debtholders end up with significant equity interests in the newly restructured firm as our findings suggest, they will have great influence in the reappointment and remuneration

of management ex-post the bankruptcy. Alignment with the interests of fulcrum creditors can also bring management benefits during bankruptcy. Often senior managers experience a considerable reduction in wealth as their (low priority) equity share in the distressed firm is cancelled under the FS valuation rules. This wealth loss can be compensated by pay-to-stay remuneration plans offered by fulcrum creditors who are the key voting party in the reorganization. The compensation plans (key employee retention plans or KERP's), and other incentives) offer managers generous salaries to stay in the job and steer the firm out of Chapter 11, which incentivizes managers to produce creditor friendly valuations (Bharat et al., 2014). We provide evidence that the amount of management compensation during bankruptcy is four times higher in firms with vulture fund involvement. Further, we find that, in the presence of vulture funds, management compensation is lower when there is a high competition for management attention (proxied by the number of voting classes), an indication that vultures have less scope for alignment of management interests with their own when they have relatively less bargaining power in the negotiations.We perform several additional tests. First, we observe the market value of the firm 12 months after bankruptcy and compare it with the FS value of the firm at emergence. A-priori, when a Chapter 11 firm emerges from bankruptcy, it is no surprise if the market value increases rapidly. However what would be surprising is to systematically observe inconsistency between the FS value estimated by management and the actual market value soon after bankruptcy. Valuation inconsistency arises when large downward FS valuations are systematically followed by large increases in subsequent market values. This reversal in firm value (which we refer to as *whiplash*) suggests FS valuation bias. We find increasing levels of such reversals when vulture funds hold fulcrum claims. Considering that vulture investors usually purchase debt of troubled firms at a large discount (given the uncertainty of Chapter 11 and the lack of liquidity, creditors prefer to sell cheap than to risk receiving nothing in the new firm, Ivashina et al., 2016), the reversal in market values

can give vultures the opportunity to earn large ex-post returns by trading the stock or selling the firm's assets at higher market prices.

Second, we examine the relation between vulture funds loan-to-own strategies and the likelihood of post-bankruptcy accounting restatements. If the undue influence of vulture funds is reflected in the reported FS values, we expect that a firm is more likely to formally restate previously filed accounting statements. We find that the probability of reporting an accounting restatement related with asset measurement in the year after bankruptcy is 28% higher when vulture funds hold high-intermediate seniority claims.

Vulture funds are not the only party whose interests are at stake in the restructuring process, so why do other stakeholders not pursue a similar loan-to-own strategy? Put simply, other parties lack the incentives and the means of vulture fund investors. Banks prefer a loan-to-loan strategy because they have incentives to strengthen the seniority and security of their existing loans and to provide debtor-in-possession (DIP) financing (Heron et al., 2009; Ivashina et al., 2016; Li and Wang, 2016). Banks are also burdened by capital requirements which reduce opportunities for high-risk Chapter 11 investments. Other institutional investors, such as pension and mutual funds, are constrained by regulatory and structural barriers which exclude them from distress investment strategies (Brav et al., 2008). For example, mutual funds are precluded from holding large percentage stakes in individual companies, and pension funds are subject to heightened fiduciary standards and to extensive state controls. Unlike vulture funds, both mutual and pension funds fall under the SEC's Investment Company Act 1940 which greatly limits their flexibility in trading. Other types of funds, such as private equity and venture capital funds, focus on private investments. In terms of replicability of the vulture fund's strategy, there is a first mover advantage for the first agents (timely vulture funds) that purchase the fulcrum debt. As most of the debt trades during bankruptcy are private and lack market

oversight (e.g. low liquidity and analyst following), identifying potential sellers and negotiating privately to buy their claims requires specialist information and skills that other agents do not have (Gilson et al., 2000; Ivashina et al., 2016). In sum, vulture investors hire highly incentivized fund managers who invest large sums of money in risky strategies (Gilson, 1995; Brav et al., 2008), they are not burdened by demanding reporting requirements and regulatory oversight (Harner, 2011), and they are capable of taking control over management and the board of the distressed investment (Hotchkiss and Mooradian, 1997; Li and Wang 2016).

Our findings contribute to understanding how important claimholders are able to influence the value of firms that emerge from court-supervised bankruptcy. We discuss and provide empirical evidence that the discretion allowed by fresh start accounting offer fulcrum claimants' opportunities to introduce valuation bias. We show that management compensation is one channel that fulcrum vulture funds may use to bias values during the negotiations in the desired direction. Our findings also add to the extensive literature on management desire to manipulate accounting values. A growing literature typified by Gwilliam and Jackson (2008) argues that attempts to move to market-based valuation have not prevented management or other interested parties from introducing bias in valuation. In the absence of liquid market prices for assets of Chapter 11 firms, the estimation of fair values based on forecasts potentially introduces error and management discretion (e.g. Dietrich et al., 2000). Our evidence suggest that relying on the assertion that fresh start accounting values are based on fair values estimated by independent experts and hence free of bias is problematic especially when interested parties have strategic reasons for bias. Finally, our study also adds to the debate on the nature and effects of hedge fund activism in Chapter 11 cases. We draw on the findings by Jiang et al. (2012), Ivashina et al. (2016), Li and Wang (2016) and others and explain how vulture funds

can position themselves to exploit the unique features of FS valuation to influence the "size of the pie" allocated to various claimants.

The rest of the article proceeds as follows. The following section describes the sample and data. Section 3 discusses the methodological approach and Section 4 presents the empirical findings. Finally, Section 5 concludes.

2. SAMPLE AND DATA

2.1 SAMPLE

To identify the firms using fresh start accounting, we start with the complete UCLA-LoPucki Bankruptcy Research Database of firms that filed under Chapter 11 or Chapter 7 of the Bankruptcy Code.[2] This sample comprises 920 companies over the period 1980 to 2011. We exclude firms that are liquidated in Chapter 7, firms that emerged from bankruptcy prior to 1994[3], and firms not included in Compustat, Capital IQ and CRSP, and we end up with 375 firms. From this sample, we removed cases where the court approved the sale of all or almost all of the assets, thus resulting in a sample of 337 companies. The LoPucki database registers if the company made a fresh start filing in the field "FreshStartAccounting". For the sample of 337 firms, we find "yes" in the field for 77 companies and "no" for 16 companies, leaving 244 companies unclassified. For the 244 unclassified firms, we search all the companies' filings in the SEC EDGAR database for the phrase "Fresh Start" around the date of emergence. If we do not find the phrase, then we exclude the company. If we do find the phrase, we search through

[2] The UCLA-LoPucki Bankruptcy Research Database includes firms with assets worth $100 million or more measured in 1980 dollars as of the last 10-K filing immediately prior to filing for bankruptcy; and filed a 10-K for the year ending not less than 3 years prior to the bankruptcy filing.
[3] In order to collect fresh start accounts, we need to be able to search the SEC EDGAR database which only records companies back to 1994.

all the SEC filings and collect the associated FS accounts. We then eliminate cases for which we do not have the necessary financial and market data, resulting in a final sample of 127 firms that went through Chapter 11 bankruptcy between 1994 and 2011. For this sample we read all the fresh start accounts and manually collect the asset value of the firm at filing of bankruptcy (predecessor firm) and at exit from bankruptcy (the successor firm). The difference between the two values is the fresh start (re) valuation.

2.2 IDENTIFYING THE PRESENCE AND STRATEGY OF VULTURE FUNDS IN BANKRUPTCY

There is no database identifying vulture fund investors, thus we construct a unique list by combining the Altman and Kuehne (2011) classification of 324 funds with the list of 258 distressed debt funds provided by *Distressed-Debt-Investing.com*. We obtain a list of 399 vulture fund investors.[4]

The next step is to identify the presence of any of the 399 vulture funds in the sample firms and their loan-to-own strategy. To implement the strategy, the fund needs to acquire the class of debt that is fulcrum. However, observing the holdings of debt claims is difficult because there are no public records of trades during bankruptcy. Most deals are negotiated privately and recorded in court-sealed documents which are not tracked by one central registry or entity. Further, even with access to the court documents it is difficult to obtain information on the original holders because many of them are hidden behind Depository Trusts that act as custodians of the original holders (Ivashina et al. 2016).[5] We overcome this limitation by

[4] Of the 75 additional vulture funds identified, 45 have names similar to those in the Altman classification. For instance, Cerebrus Capital Management LP and Cerebus Partners are both identified as vulture funds and so we treat them as one. But we note that the potential double counting of funds with similar names does not affect our results because our statistical tests look at the total holdings of all vulture funds from the list, not the number of vulture funds with a holding. The list of vulture funds is available from the authors upon request.

[5] To our knowledge, the only systematic evidence on the trading of claims *during* Chapter 11 is provided by Ivashina et al. (2016) who are able to obtain information from court documents at two points in time: at entry

implementing the following procedure. First, we identify the fulcrum class of debt for each firm. We obtain reorganization plans provided by *BankruptcyData.com* which lists the classes of claims that are honored (unimpaired), the classes cancelled in full (impaired), and the classes partially impaired (the fulcrum debt). The reorganization plans provide information about the type and the relative seniority of the classes, but they do not identify their holders. Second, we conduct extensive news searches in Factiva to establish whether any of the 399 vulture funds has acquired the identified fulcrum security of a particular firm. We search using the following combination of key words: (1) firm name (2) vulture fund name and (3) the description of the fulcrum class obtained from the reorganization plans (e.g., "Class 4 senior notes claims", "Secured class 3 debt", "Class 7 impaired unsecured junior claims"). The process of manual searching and reading through Factiva documents also helps us understand the reorganization setting of each firm. For example, we are able to identify who the other important players are, banks and funds for example, and whether there are disputes amongst various claimants. Third, we check whether the debt class held by a vulture fund is indeed swapped for equity on exit from Chapter 11. We do this by searching SEC filings 13D, 13D/A, 13G, 13G/A, 13F, 10K, and 8K for each firm over the period from six months before the bankruptcy filing to six months after emergence from bankruptcy.[6] From these filings, we collect equity ownership by vulture funds and by other important claimants, on the dates of entry and exit from bankruptcy. Based on this analysis, we group vulture funds (VF) into two types: (1) VF that purchased unsecured

and close to exit of chapter11. They show that active investors are the main buyers of distress debt during bankruptcy, and that they hold a significant portion of claims by the time votes are made on the final plan of reorganization.

[6] Investors are required to file with the SEC within 10 days of acquiring more than 5% of any class of securities of a publicly traded company. Investors should file schedule 13D filings (active investors) or 13G filing (passive investors). Form 13F filings require all institutions that have investment discretion over a minimum of $100 million in Section 13(f) securities of the Securities Exchange Act to disclose their quarter-end holdings in these securities. If the investor receives more than 5% equity interest in the reorganized firm over the course of Chapter 11 restructuring, then the original debt positions that vest the fund with such equity ownership is recorded in "Item 3: Source and Amount of Funds or Other Consideration" of the 13D form.

junior claims of a relatively low seniority which we call VF holding *Low-Intermediate Seniority* claims, and (2) VF that purchased secured or more senior classes of claims which we call VF holding *High-Intermediate Seniority* claims.

Since the precise fulcrum point is not known until the reorganization plan is approved by the court, the low-intermediate seniority claims are likely to be positioned below the fulcrum point while the high-intermediate seniority claims are expected to be positioned above the fulcrum point. Thus, we predict that vulture funds are likely actively involved in negotiating the fresh value of the firm, and that this negotiation is related, at least partially, with the relative position of their claims in the debt structure of the firm. (see Figure 1 for graphical interpretation). In particular we anticipate that, on average: (a) VF holding low-intermediate seniority claims welcome upward FS valuations; and (b) VF hold high-intermediate seniority claims favor downward FS valuations.

3. EMPIRICAL MODEL

Vulture funds are sophisticated investors that can select the Chapter 11 firms that best serve their interests and hence their targets are probably not random, but result from a deliberate choice correlated with unobservable conditions. To address the potential endogeneity in vulture investment decisions we fit the following two-stage treatment model:[7]

$$FSvaluation\_bias_i = X_i\beta + VFStrategy_i\delta + \varepsilon_{i,}$$

$$VFStrategy_i = \begin{cases} 1, & if\ Z_i\gamma + \mu_i > 0 \\ 0, & otherwise \end{cases} \quad (1)$$

[7] The model is as described in Wooldridge (2002, section 15.7.3), Guo and Fraser (2009, section 4) and is implemented in the hedge fund literature (e.g. Jiang et al., 2012; Lim, 2015).

The left-hand-side variable in the second stage equation is the measure of the fresh start (FS) valuation bias which we compute in two ways. The first (*FSrevaluation*) is an accounting-based measure calculated as the difference between the successor firm FS value of assets at Chapter 11 exit (v_e) and the predecessor firm value of assets at Chapter 11 entry (v_f), scaled by the book value of equity plus book value of debt after emergence. *FSrevaluation* takes into account that the predecessor value is an unbiased firm value known to vultures at bankruptcy entry point at which they decide how to negotiate valuation to turn their claim into a fulcrum security. In other words, based on the observed predecessor value vultures are likely to bias asset valuations during the negotiations in the desired direction so that a reached successor value ensures that their debt claims are swapped for equity. The second measure (*FSmisvaluation*) compares the FS value of assets at bankruptcy exit (v_e) with the market value of the assets at that date ($v_{m,e}$). This measure has been used in other chapter 11 studies and has the advantage of comparing firm values at the same point in time (e.g. Lehavy, 2002; Gilson et al., 2000). Using the market value to compute the valuation bias implicitly assumes that market value represents an unbiased estimate of the firm's intrinsic value at exit date. That assumption has limitations because many firms do not trade immediately after bankruptcy or trade only over the counter; while those that do trade suffer from asymmetries of information due to low liquidity and low analyst coverage (e.g. Li and Zhong 2013; Eberhart et al. 1999). Furthermore, the first day of trading is difficult to track and consequently poorly recorded by commercial databases such as CRSP[8].

[8] Most stocks of reorganized firms do not trade immediately after emergence date, and when trading begins it is usually only in OTC markets and thus not recorded by CRSP. Additionally the identification of the first day of trading is not obvious because it varies with the particular characteristics of the new and old stock such as whether the new shares trade under the old name or a new name, or whether the old shares are fully cancelled or continue to trade.

The key right-hand-side variable of interest is *VFStrategy* which takes two alternative definitions reflecting the two strategies explained in Section 2.2: (1) *VF LowISeniority claims* which equals one when vulture funds hold low-intermediate seniority debt claims, and zero otherwise; and (2) *VF HighISeniority claims* which takes the value of one when vulture funds hold high-intermediate seniority debt claims and zero otherwise.

The set of explanatory variables included in Vector X_i are selected following prior literature on vulture fund participation in bankruptcy outcomes. Vector Z_i includes variables that are common to vector X_i in the second stage equation, plus two instruments: *HF distress return* and *Bond return*. *HF distress return* is the monthly average return over the three months before bankruptcy of an index of distress-investing hedge fund return and represents the supply conditions of hedge fund distress-investors (Jiang et al., 2012). *Bond return* is an indicator variable taking the value of one if the three-month average bond return of S&P500 firms before bankruptcy is positive and zero if it is negative. The variable captures the good and bad conditions in public debt markets which are likely to be associated with the supply-demand dynamics of the distressed claims.[9].

To choose the explanatory variables (overlapping in vectors X_i and Z_i), we address two questions. How do vulture investors decide their investment strategy? Which incentives of vulture funds and other players are likely to affect the outcome of the restructuring? Vultures typically consider whether the firm is economically healthy or the problem lies with the firm's business model. We include *Operating performance pre-bankruptcy* to capture the economic

[9]By including *Bond return* and *HF distress return* as instruments (exclusion restrictions) in the first stage, our approach ensures that at least one component of vector Z is a unique determinant of the endogenous variables *VFStrategy* (see for example Guo and Fraser, 2009, section 4.4). Because it is unlikely that there is a firm-level characteristic which satisfies the exclusion restriction requirement so that it determines the *VFStrategy* without simultaneously influencing the *FSrevaluation* outcome, we follow the approach employed by Jiang et al. (2012) and choose variables capturing market-wide conditions for distress-investing hedge funds. We repeat the tests using S&P500 stock returns instead of bond returns, as in Jiang et al. (2012), and our results do not change.

strength of the target firm, measured as the average of the industry-adjusted ratio of operating income to sales, in the year before bankruptcy filing (Lim, 2015; Ivashina et al., 2016).

Vulture funds might also prefer capital intensive firms because their assets are relatively easy to value, and can be sold after bankruptcy at higher prices. We include *Tangibility pre-bankruptcy* measured as an indicator taking the value of one if the firm's tangibility (the average of plant, property and equipment to total assets in the year before bankruptcy) is above the sample median, and zero otherwise.

The characteristics of the firm's capital structure are important determinants of both fresh start valuations and vulture investment decisions. For example, when a firm has a high debt-to-assets ratio, low seniority claims are more likely to fall significantly below the fulcrum point. In that case, vulture investors are less likely to purchase *LowISeniority* claims because junior claims risk being cancelled in full. At the same time, there is a greater probability that senior debt will be partially impaired in which case holding *HighISeniority* claims gives more upside potential. Debt-to-assets is also a proxy for claimants' bargaining power (Lehavy, 2002). *Debt to assets pre-bankruptcy* is the average of the debt-to-assets ratio in the last year before filing for bankruptcy. We also consider the proportion of secured bank debt (*Secured debt*) measured as the average ratio of secured bank debt to total assets in the year prior to bankruptcy (Jostardndt and Sautner, 2009; Jiang et al. 2012; Franks and Loranth, 2014). As bank lenders usually follow a loan-to-loan strategy because their incentives are to enforce existing loans' seniority and security (Heron et al., 2009; Li and Wang, 2016), other senior debt holders have less room for activism in the negotiating process. As a result, there is less upside potential from pursuing a *HighISeniority* strategy. High level of secured bank debt suggests that the senior debt is more likely to be under-collateralized. The under-collateralized debt gives secured creditors incentives to promote the reorganization (instead of liquidation of assets) providing more upside potential for junior claimants and hence encouraging a *LowISeniority* strategy. A

large portion of secure debt in the hands of banks also reduces coordination problems (Jostardndt and Sautner, 2009). To account for the influence of DIP lenders in the outcomes of the reorganization, we add the indicator *DIP financing* in the second stage of the model (Elayan and Meyer, 2001; Bharat et al., 2014; Li and Wang, 2016). Next, we consider the presence of large public debt (*Public debt* is coded as one if a firm has above-median public debt outstanding in the year before bankruptcy, and zero otherwise). We build on advances in the literature (Lim, 2015) showing that there are often coordination problems among public debt holders. In the presence of public debt outstanding, bank lenders, who are generally secured and senior to public debt lenders, are reluctant to engage in restructuring efforts or to make concessions such as extending maturities and granting new loans. Given vultures' willingness to take junior public debt claims and their superior ability to resolve coordination problems, the presence of public debt provides them with an upside opportunity, particularly with a *LowISeniority* strategy. This argument is consistent with the findings of Hotchkiss and Mooradian (1997) and Jiang et al., (2012) of a positive market reaction to the purchase of public debt by vulture funds.

There are other important players in the bankruptcy process, namely hedge funds that are not distress-oriented. In general, the presence of hedge funds has favorable effects on bankruptcy outcomes (Jiang et al., 2012; Lim, 2015). Their presence as a major equity holder is related with more favorable fresh start values, otherwise they would be unlikely to receive any payoffs. We include *Presence of other hedge funds* taking the value of one if at least one non-distress hedge fund is an equity holder during bankruptcy, and zero otherwise.[10]

[10] We obtain a list of 584 hedge funds by merging the list kindly provided by Wei Wang (Jiang et al., 2012), the Altman-Kuehne (2011) list, and the list from *Distressed-Debt-Investing.com.* We then search SEC filings 13D, 13G, 13F, 10K and 8K for each sample firm from six months prior to bankruptcy until exit from bankruptcy, to identify the equity holdings by each hedge fund in the list. We also looked for the presence of banks, institutional investors, and other funds as equity holders. We found very few cases of holdings by these investors, confirming prior findings that these investors stay away from distress firms.

Contracting problems and frictions among claimholders affects funds' investment decisions and valuation outcomes (Gertner and Scharfstein, 1991). We introduce the variable *Number of claimants* - number of claim classes identified in the plan of reorganization to represent contracting issues during bankruptcy (Gilson, 1997; Lehavy, 2002; Jiang et al., 2012; Lim, 2015).

We capture senior management's incentive to cooperate with vulture investors in the valuation negotiations by including *Management compensation* which measures the total compensation offered to top managers during bankruptcy scaled by total assets of the predecessor firm multiplied by 10^3. We manually collect the amount of management compensation from the companies' fillings. We also add to the model *CEO time at bankruptcy,* calculated as the log transformation of the number of days the CEO has served in the firm at the filing date (Hotchkiss, 1995; Gilson et al., 2000; Lehavy, 2002).

Since the duration of the restructuring process is related with valuation disagreements among claimants (Franks and Torous, 1989), we add *Bankruptcy duration* defined as the log transformation of the number of days between the Chapter 11 filing date and the emerging date.[11]

Finally, we capture time and industry variation in reorganizations. Indicator *Time* is coded one if the bankruptcy filing date is in periods of high prevalence of bankruptcies (periods 2000-2003 and 2009-2010), and zero otherwise. Industry indicators are based on four industry groups.[12] Table 1 provides definitions of variables.

Place Table 1 here

[11] We note that *DIP financing, Management pay-to-stay* and *Bankruptcy duration* are not included in the first stage of the model because they are granted or known only during and after the reorganization process. Thus, they are not *ex-ante* determinants of vulture funds' investment decisions.

[12] We aggregate one-digit SIC industry indicators into four industry groups to deal with the small number of observations per industry.

4. RESULTS

4.1 VULTURE FUNDS AND FRESH START VALUATION BIAS: DESCRIPTIVE EVIDENCE

Table 2 reports an overview of the first measure of FS valuation bias, i.e. *FSrevaluation*. We split the unscaled FS revaluation measure (successor assets –predecessor assets) into positive and negative cases. Firms with positive revaluations (N=62) experience a mean increase of $875.16 million, which is mostly achieved through the increase of the fresh start value of goodwill and intangibles. Firms with negative revaluations (N=65) show a mean decrease of -$706.08 million, mainly due to the write-off of PPE and, to a lesser extent, other non-current assets.

Place Table 2 here

As we are interested in how *VFStrategy* relates to FS valuation bias, we focus on firms with vulture funds presence and we split these firms by *VFStrategy*. In Table 3, we report mean and median values for the two measures of FS valuation bias, *FSrevaluation* ($v_e - v_f$) and *FSmisvaluation* ($v_e - v_{m,e}$), for firms in which vultures hold *LowISeniority* claims and for firms in which they hold *HighISeniority* claims. We find that out of the 21 firms in which vultures enter the capital structure at relatively junior positions, 20 firms exit Chapter 11 with positive FS revaluation, whereas only 1 firm exits with a negative FS revaluation. In contrast, out of 39 firms in which vultures purchase senior claims about two-thirds (26) exit Chapter 11 with negative FS revaluations.[13] The mean and median values of *FSrevalution* are positive for firms with VF holding *LowISeniority* claims but they are negative for firms with VF holding

[13] In the multivariate analysis we repeat our tests excluding the 3 cases where vulture funds hold both types of debt claims. Our results do not change.

HighISeniority claims, and the difference between the two groups of firms is statistically significant at the 1% level. *FSmisvaluation* is negative for both VF strategies but it is more negative when vultures hold high seniority claims and hence prefer lower valuation. This descriptive evidence suggests that there is a link between the relative position of the claims that vultures acquire during bankruptcy and the firm's fresh start value at the exit from bankruptcy.

For completeness, we also report in Panel B of Table 3 the mean and median *FSrevaluation* and *FSmisvaluation* by vulture fund presence. Mean *FSrevaluation* is -0.040 for firms with vulture fund presence and -0.308 for firms without vulture involvement, a result consistent with prior evidence that hedge funds' presence increases recovery rates (Jiang et al., 2012).[14] *FSmisvaluation* is lower when vulture funds are involved then when they are not but the difference is not statistically significant.

Place Table 3 here

Table 4 provides univariate evidence of the link between management compensation during bankruptcy and the presence of loan-to-own vulture funds in Chapter 11. Management compensation refers to payment schemes, such as KERPs, that are offered to the management team to assist the valuation negotiations and help steer the business out of bankruptcy. The mean value of *Management compensation* is more than four times higher in firms with vulture fund presence (Panel A). This evidence suggests that management alignment is important channel through which vulture investors are able to influence valuation negotiations. Promoting

[14] We document a lower proportion of hedge fund involvement (50%) than in prior studies (e.g., Jiang et al., 2012; Lim, 2015) because we study a particular type of hedge fund (vulture funds). When we consider both vulture funds and other hedge funds, we find hedge fund presence in 73% of cases, a proportion similar to that of other studies.

generous compensation to the agent that is responsible for the estimation of asset values gives vulture funds leverage to influence the valuation in their favor. In Panel B of Table 4 we examine whether the compensation varies depending on the bargaining power and the competition of the negotiating parties[15]. We split management compensation into strong and weak competition among the claimants (measured as an indicator taking the value of one if number of voting classes is above the sample median, and zero otherwise) and find that for the cases with vulture presence, *Management compensation* is significantly higher when the competition is weak. One possible interpretation of this finding is that when the claimants' competition for management influence is weak, the relative bargaining power of an individual creditor (i.e., an influential vulture fund) is stronger and they have more scope to secure attractive incentives to mangers that favor their interests.

Place Table 4 here

In Table 5 we compare vulture ownership at entry and exit from bankruptcy to see if vultures succeed in increasing their share of control rights. Vulture equity holdings increase substantially, both in statistical and economic terms. Vulture ownership jumps from 0.7% at entry to 17.9% at exit from bankruptcy. For firms in which vultures invested via *LowISeniority* claims, the equity holdings increased from 1.5% to 21.6% on average. For firms where vultures acquired *HighISeniority* claims, average equity holdings increased from 0.3% to 16.7%. These findings suggest that both loan-to-own strategies result in a significant increase in control over the new firm.

Place Table 5 here

[15] We thank the editor and the anonymous referee for this suggestion.

We next provide two examples from our sample firms that illustrate clearly the strategic influence of vulture investors on bankruptcy valuations. The first case shows the pivotal role of vulture funds holding junior debt in the fresh start value of Six Flags (we identify Tricadia Capital Management, 1798 Global Partners, Fortelus Capital Management, and H Partners Management LLC as vulture funds).

"*At the centre of a dispute between Six Flags and competing groups of creditors is whether the company's current proposed reorganization plan undervalues the company, preventing some creditors from getting what they feel they deserve. Over the last 18 months, one of its senior debtholders, Avenue Capital Group, has reduced its estimates of how much the company is worth by about $1 billion. Six Flags filed Chapter 11 in June with a prepackaged restructuring plan that transferred nearly all of its stock to its bank lenders in return for cutting its debt. Since then, two other creditor groups have sought to fight for control of the company. An informal bondholders group led by Avenue Capital has proposed a plan, now supported by the company that values the company at around $1.5 billion, meaning lower tier creditors would only be eligible to recover a 4.8 percent stake in the reorganized company. A group of those lower tier creditors, known as the "Stark-led noteholders," asked the court earlier this month for permission to file a competing plan of reorganization, saying they have a better proposal that would allow them to take more control over the company after bankruptcy…the ad hoc group led by Stark included Credit Suisse Securities, Tricadia Capital Management, 1798 Global Partners, Capital Ventures International, Altai Capital Management, Pentwater Capital Management, Fortelus Capital Management, H Partners Management LLC and Bay Harbour Management LLC.*" (Chasan, E. in the Reuters News, 4 December 2009).

The second case illustrates how vulture funds holding more senior debt pressure the fresh start value of the firm to guarantee the swap of the debt for a share of equity post-bankruptcy (we identify Tennenbaum Capital Partners and Bennet Management Corp. as vulture funds).

"In August, a Bankruptcy Court in New York approved a reorganization plan that trimmed $200 million off the company's books through a debt-for-equity swap. Under the plans terms, holders of $305 million in secured subordinated notes would receive $75 million of new unsecured notes and 96% of the reorganized company's new common stock. After the swap, International Wire's largest shareholder is Tennenbaum Capital Partners LLC of Santa Monica, Calif., which holds a 25 percent stake. GSC Partners Inc. of Florham Park, N.J., and Bennett Management Corp. hold stakes of 16 percent and 14 percent, respectively, according to a filing with the Securities and Exchange Commission." (Beaudette, M. in Dow Jones Newswires, 26 August 2004).

Table 6 Panel A sets out summary statistics for the variables used in the multivariate analyses. The median *FSrevaluation* is close to zero, which is to be expected since half of the sample firms experience a decrease and the other half an increase in fresh start asset values. The average *FSmisvaluation* indicates that FS successor values underestimate market values by 5.5%, a number slightly higher than the 4% undervaluation reported by Lehavy (2002). Both the median and mean ratios of *Debt-to-assets pre-bankruptcy* are close to one, higher than the mean and median for the Compustat universe, an indication of financial distress and comparable to the ratios found in other studies (e.g., Jiang et al., 2012). The mean (median) *Operating performance pre-bankruptcy* is -0.144 (-0.041), lower than the mean (median) for the Compustat universe and comparable to that found in other papers on Chapter 11 firms. In Panel B of Table 6 we present mean values of selected firm characteristics by industry. *FSrevaluation* is more negative in the agriculture and mining sectors, and positive in the services sectors. Table 7 reports the pairwise correlation coefficients among variables used in the regression models.

Place Tables 6 and 7 here

4.2 VULTURE FUNDS' STRATEGIES AND FRESH START VALUATION BIAS

How does a particular *VFStrategy* affect *FSrevaluation* in a complex setting where other factors are present? We address this question by estimating the selection model presented in section 3. We report the results for the first measure of valuation bias (*FSrevaluation*) in Table 8 and for the second measure (*FSmisvaluation*) in Table 9. Panels A and B of Table 8 present the results from the second and first stage of the *FSrevaluation* regressions, respectively. The results confirm the patterns observed in Table 3. Columns 1 and 2 in Panel A of Table 8 show that the presence vultures holding *LowISeniority* debt instruments has a positive effect on *FSrevaluation*, and that the effect is statistically significant at the 1% level. In economic terms, moving from a firm with no *LowISeniority* vulture investor to a firm with *LowISeniority* vulture

investors results in a 1.487 (1.874/1.260) standard deviation increase in *FSrevaluation.* Activist vulture funds risk receiving nothing in the reorganized firm if the fresh start value is too low and thus have incentives to influence management estimates of fresh start values upwards to the point that their claims are partially (but not fully) impaired.

The results in columns 3 and 4 of Table 8 suggest that *HighISeniority* strategy is significantly related with a downward *FSrevaluation*, which confirms our prediction that vulture funds that acquire claim of *HighISeniority* vultures have incentives to negotiate lower fresh start values so that their claims are partially impaired and swapped for equity. The magnitude of the estimates is economically significant: a firm in Chapter 11 with *HighISeniority* vulture investors exits bankruptcy with 1.138 (1.434/1.260) standard deviation lower fresh start values than a firm without *HighISeniority* vulture investors. As an additional analysis we decompose the dependent variable *FSrevaluation* into the three types of asset most impacted by fresh start accounting, i.e. 'FS revaluation of PPE', 'FS revaluation of goodwill and intangibles' and 'FS revaluation other non-current assets', and re-estimate the model. The results (reported in the internet Appendix) are consistent with our main findings in Table 8.

In columns (2) and (4) we estimate the effect of *VF LowISeniority* and *VF HighISeniority* conditioned on *Management compensation* offered during bankruptcy. The effect of vulture fund strategy on FS revaluation reinforces with the amount of compensation offered to management during bankruptcy. When vultures have incentives to understate fresh start values granting managers the average amount of compensation increases the understatement by about 2%. On the other hand, when vultures favor overstated fresh start values offering the average management compensation enhances overstatement by about 6%. Combined with the descriptive evidence in Table 4 these results suggest that management compensation is an important channel that vulture investors can use to exert influence over bankruptcy valuation.

Regarding other factors affecting *FSrevaluation,* we find that *Bankruptcy duration* has a positive impact but only when vultures hold *HighISeniority* claims (column 3). This result suggests that *HighISeniority* vultures face strong opposition from claimants that are against lower valuations (junior claimants and shareholders), resulting in longer negotiations and possibly more amendments to the reorganization plans. Another noteworthy finding is the significantly positive effect of *Debt to assets pre-bankruptcy* across all models, which indicates that when leverage is high there is relatively more impaired debt, and that the impaired claimants prefer upward *FSrevaluation* of assets in order to secure the recovery of their claims. We find that the *Presence of other hedge funds* has a significant and positive effect on *FSrevaluation* when vultures hold *HighISeniority* claims, which is in line with our conjecture that other hedge funds are usually unsecured claimholders who favor larger valuations. We also find that firms with large levels of *Public debt* experience lower *FSrevaluation.* Considering that public debt is typically junior and held by a vast number of uncoordinated investors, other more powerful players are likely to have incentives to depress the firm value enough to wipe out junior public claimants. *Number of claimants* results in higher FS valuations because management and self-interested parties have incentives to overstate the value of the successor firm to satisfy a large number of creditors in order to promote the acceptance of the plan. Panel B of Table 8 presents the determinants of vulture fund strategy (the first-stage treatment equation). *Tangibility pre-bankruptcy* is an important determinant of the *HighISeniority* strategy as capital intensive firms offer the possibility of subsequently selling the assets at increased prices. Vulture funds prefer a *HighISeniority* strategy when *Debt to assets* is high because there is a greater chance that senior claims will be converted into equity (columns 3 and 4). On the other hand, high leverage means a greater likelihood that junior claims will be completely wiped out, making a *LowISeniority* strategy less appealing (negative and significant coefficients in columns 1 and 2). High levels of *Public debt* (typically junior) encourage vulture

funds to buy *LowISeniority* rather than *HighISeniority* claims because they are better able to solve coordination problems among junior public debtholders. We also find that vulture funds are less attracted to a *HighISeniority* strategy when the *Secured* (bank) is large which suggests that there is less room for senior debt holders' activism when banks hold large portions of debt. On the other hand, vulture funds are more inclined to *HighISeniority* strategy when other hedge funds hold equity positions in the firms. A large *number of claimants* discourage *LowISeniority* investments. Finally, instrumental variable *bond return* is positively related to *LowISeniority* and negatively related with *HighISeniority*. When bond market conditions are good (measured by positive bond returns over the previous three months) distressed-oriented investors are more inclined to invest in relatively more junior than in senior claims because the risk of a full impairment is lower.[16]

Place Table 8 here

Table 9 reports the regression results for outcome variable *FSmisvaluation* ($v_e - v_{m,e}$). For brevity we report only the second-stage results; the determinants of vulture funds' investment decisions are similar to those presented in Table 8 Panel B. In line with the *FSrevaluation* results, when vulture funds acquire *LowISeniority* debt instruments *FSmisvaluation* tends to increase as the fresh start value of assets approximates the market value at emergence date. Conversely, when vulture funds holdings are *HighISeniority* the fresh start value deviates further from market value. These findings are consistent with the idea that the valuation bias in the fresh start value of the firm is increasing (i.e. greater misstatement) with vulture fund involvement in bankruptcy reorganizations. A probable channel used by vulture funds to influence the valuation negotiations is the alignment with management interests achieved

[16] To account for the possibility that conditions in the bond market are also related to FS asset values, i.e. the dependent variable in the second-stage equation, we repeat the tests including *Bond return* in the second-stage equation. The results do not indicate a systematic relation with either *FSrevaluation* or *FSmisvaluation*.

through compensation schemes. The negative coefficient of *Management compensation* * *HighISeniority* suggests that the underestimation of fresh start values is greater when managers receive generous compensation during bankruptcy negotiations.

Place Table 9 here

4.3. THE MARKET VALUE OF THE FIRM AFTER BANKRUPTCY: THE WHIPLASH EFFECT

One way of confirming if the FS value has been overly pressured is to examine whether the market adjusts the FS value of the firm after it emerges from bankruptcy. If the firm emerges from bankruptcy, it would not come as a surprise if future market value exceeds the emergence FS value. What would be surprising is to observe that a downward (upward) FS revaluation is systematically followed by an increase (decrease) in subsequent market value. These systematic reversals in value would suggest that the FS values of assets, which are estimated based on fair values, are subsequently found to be incorrect by the market. We refer to the post-bankruptcy reversal of value as the *whiplash* effect. We suggest that the whiplash effect is indicative of FS valuation bias. Figure 2 illustrates the definition of the *whiplash*. The value of the predecessor firm at the filing date is v_e, the value of the successor firm at emerging date is v_f, and the market value at period t after bankruptcy is $v_{m,t}$. For example, the whiplash (ω) occurs when $v_f > v_e$ (downward FS revaluation) is followed by $v_{m,t} > v_e$ (upward market revaluation). That is:

$$\omega = \left(v_f - v_e\right) + \left(v_{m,t} - v_e\right) \quad (2)$$

We compute *whiplash* (ω) as the sum of the two elements. The first element is the negative difference between the successor's FS value of assets and the predecessor's assets

(term (v_f - v_e)).[17] The second element is the difference between the market value of the firm four quarters after emergence and the successor's FS value of (term ($v_{m,t}$ - v_e)). The variable is scaled by book value of equity plus book value of debt after emergence.

We re-estimate the model replacing the dependent variable with *whiplash* and set out the results in Table 10. We find a significant (at the 1% level) downward (upward) post-emergence market revaluation in the presence of vultures holding *LowISeniority* (*HighISeniority*) claims. These reversals of the FS value suggest that assets values have been biased by *LowISeniority* (*HighISeniority*) vultures during bankruptcy. It is possible that vulture investors have strategically influence FS valuation to create the opportunity to earn significant returns from subsequent value shifts. For example, vultures could earn high rents by negotiating FS values relatively down and then subsequently selling their equity positions at higher market values. To control for the fact that the reversal of FS value may result from changes in the firm's performance, we include the variable *Operating performance post-emergence* (average of the ratio of operating income to sales in the first year post-bankruptcy).

Other noteworthy findings are as follows. Similarly to Table 8, we observe a positive relation between *Tangibility pre-bankruptcy* and *whiplash*. The *whiplash* effect decreases with the *CEO time at bankruptcy* which indicates that when the CEO is replaced shortly before reorganization negotiations, there is greater fresh start valuation bias (Lehavy, 2002). *Number of claimants* is positively associated with *whiplash* suggesting that vultures may be able to extract higher rents by overcoming coordination problems amongst numerous classes of claims. *Public debt* is negatively associated with *whiplash* in line with findings in Table 8. The positive and significant (at the 1% level) coefficient of *Time* suggests that there are greater shifts in

[17] Note that the first element is equivalent to the negative of the *FSrevaluation*.

subsequent market values for firms that reorganize in periods of high prevalence of bankruptcies (bad economic conditions).

Place Table 10 here

4.4 ACCOUNTING RESTATEMENTS AFTER BANKRUPTCY

Given that we argue that vulture funds influence the FS estimates, the reported estimates need to be re-assessed and the misstatements corrected when the market value of the assets changes. As a result, sooner or later the firm needs to formally amend its accounts. We investigate whether the likelihood of a formal restatement increases with the presence of loan-to-own vulture investors.

We collect the data on financial restatement types from Audit Analytics, and we select the types that are related to the valuation of assets. For example, we include restatements related to balance sheet classification and measurement of assets, irregularities related to measurement and recognition of goodwill, and errors with respect to capitalization of expenditures. We construct *Restatement* that takes the value of one if a firm reports an accounting restatement in the first year after emerging from bankruptcy due to asset valuation issues, and zero otherwise.

The results presented in Table 6 indicate that about 40% of the firms report accounting restatements related with asset valuation issues in the year after emergence. We re-estimate the model employing *Restatement* as the dependent variable in the second stage and including two additional explanatory variables: *FS revaluation of intangibles* and *Loss post-bankruptcy*. Intangibles are the assets that exhibit the largest FS revaluation (as shown in Table 2), and they are generally hard to value because of the uncertainty of the future economic benefits which in turn gives rise to measurement errors that might have to be corrected by restatements. Loss-making firms are more likely to engage in GAAP manipulations that when discovered result in formal accounts restatements (Callen et al., 2008). Results reported in Table 10 show that firms

in which vultures hold *HighISeniority* debt are more likely to report an accounting restatement after emergence. Combined with the results of *FSrevaluation* and *FSmisvaluation* (Tables 8 and 9), this finding suggests a higher probability of restatements for firms which emerge from bankruptcy with depressed FS values. In a setting where conservative accounting practices (reflected in relatively low asset values) are considered desirable for investors (e.g., Penman and Zhang, 2002), we would not expect firms with relatively low FS values to need to restate their accounts almost immediately after bankruptcy unless their FS accounts are unduly depressed. This evidence is in support of *HighISeniority* vultures' stronger preference for depressed FS values that will be corrected in the subsequent accounting restatements.[18]

Place Table 9 here

5. CONCLUSION

This research shows how the fresh start (FS) valuation of assets is an important mechanism in the settlements of claims in Chapter 11 bankruptcy. Since the fresh start value of assets of the new emerging firm are based on management-produced forecasts, there is scope for valuation discretion, particularly by claimants with a substantial influence in the bankruptcy negotiations. Distress-oriented hedge funds (known as vulture funds) achieve great influence over negotiations by purchasing large parts of the partially impaired debt (fulcrum debt) of the distressed firm; this is the class of debt that grants maximum voting power in the reorganization plan that defines the fresh start value of the firm. We find that vulture fund involvement in bankruptcy negotiations is associated with fresh start valuation bias in a way that strengthens their control rights at the exit from bankruptcy. Our findings suggest that when vulture funds

[18] In untabulated tests we narrow down the definition of the *Restatement* variable and code only the restatements of the assets most impacted by FS revaluations (PPE, GW and intangibles, other non-current assets). The coefficient on *HighISeniority* remains positive but the number of restatement cases drops substantially reducing the power of the estimations. The coefficient is not statistically significant.

acquire debt claims of relatively low seniority in the capital structure of the distressed firm, they negotiate for higher fresh start valuations to ensure that their claims are partially rather than fully impaired, and hence swapped for equity in the new firm. In contrast, when vulture funds acquire debt claims of relatively high seniority they favor lower fresh start value because the lower priority debtors then receive little or no share in the equity of the emerging firm, and the vulture fund ends up with a larger proportion of the equity. It is possible that these influences over fresh start valuations have strategic intentions as they create opportunities for vulture investors to gain important control over the new emerging firm and to earn future excess returns. Our evidence adds to the debate on whether the large returns that vulture funds earn is de-facto evidence of their role in improving the efficiency of court-supervised reorganizations. Our study highlights that it should not be assumed that these returns arise simply because of the superior management skills that vulture fund members bring to revising the fundamental business model of the firm. The returns may also be explained, at least partly, by vulture funds having strong incentives to introduce bias into the valuation process of court-supervised bankruptcies. One side effect of this potential strategic bias is that predecessor equity holders and other interested participants may suffer a considerably disadvantage.

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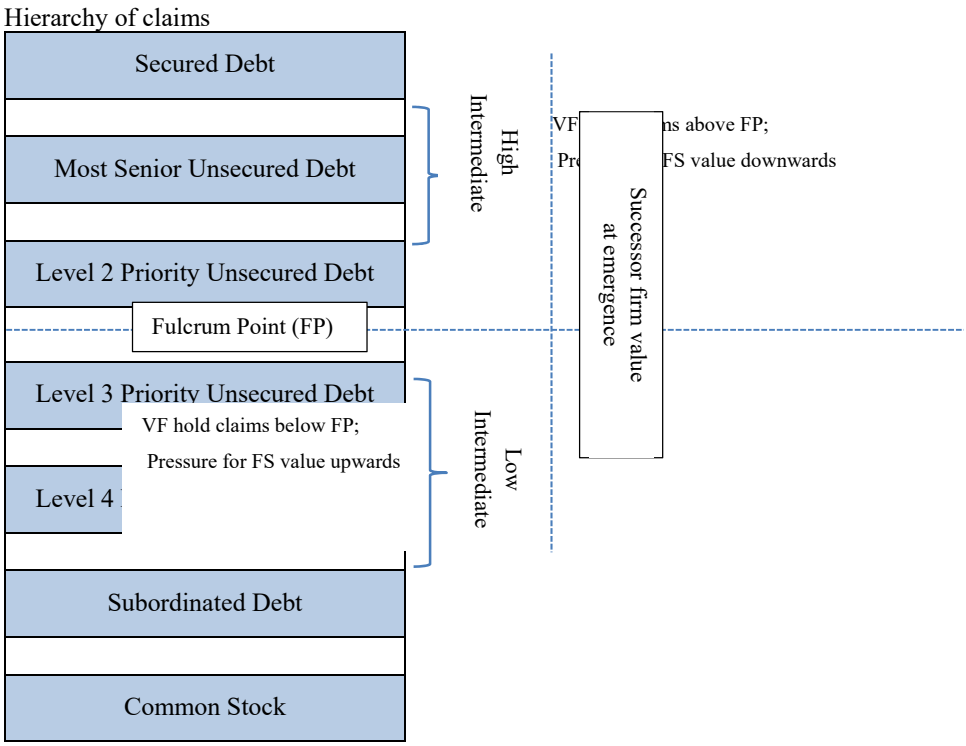
Figure 1

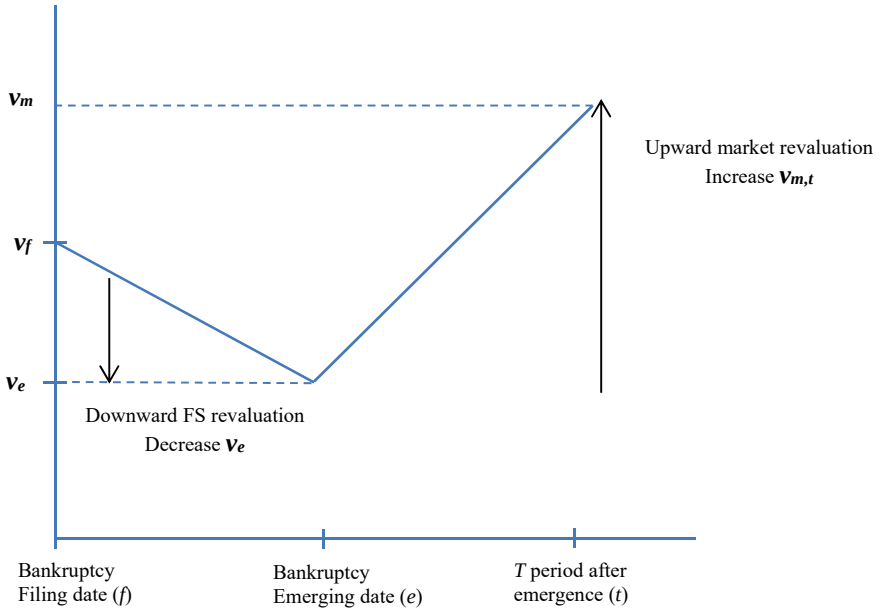
The hierarchy of claims in bankruptcy and pressure over the fresh start value of the firm



Note:This figure is an adaption and extension of figure 2 in Ivashina et al., (2016).

Figure 2

Post-bankruptcy reversal of fresh start value – an example of the Whiplash effect



For simplicity the above diagram has been drawn assuming a fixed FS downward revaluation ($v_f - v_e$) and a varying upward magnitude of market revaluation ($v_{m,t} - v_e$) depending upon the presence of vulture funds. In reality the magnitude of ($v_f - v_e$) can also vary with vulture fund presence.

Table 1 - Variable definitions

FSrevaluation	Successor total assets minus predecessor total assets, scaled by book value of equity plus book value of debt after emergence of bankruptcy i.e. ($v_e - v_f$).
FSmisvaluation	Successor total assets minus market value at emergence of bankruptcy, scaled by market value of equity plus book value of debt after emergence of bankruptcy i.e. (v_e - $v_{m,e}$).
VF LowISenority claim	Indicator variable coded as one if vulture funds hold debt claims of relatively low-intermediate seniority typically junior unsecured debt, and zero otherwise.
VF HighISeniority claim	Indicator variable coded as one if vulture funds hold debt claims of relatively high- intermediate seniority, typically senior unsecured debt or secured debt, and zero otherwise.
DIP financing	Indicator variable coded one if the firm has DIP financing, and zero otherwise.
Bankruptcy duration	Natural log transformation of the number of days between the Chapter 11 filing date and emerging date.
Operating performance pre-bankruptcy	Industry-adjusted ratio of operating income to sales in the year before bankruptcy filing. Industry median is calculated at two-digit SIC level.
Debt to assets pre-bankruptcy	Average of total debt-to-assets in the year before bankruptcy filing.
Tangibility pre-bankruptcy	Indicator variable coded as one if a firm has an average ratio of net plant, property and equipment to total assets in the year before filing for bankruptcy above the sample median, and zero otherwise.
CEO time at bankruptcy	Natural log transformation of the number of days the CEO has served in the firm at bankruptcy filing date.
Public debt	Indicator variable coded as one if the amount of public debt in the year before bankruptcy filing is above the sample median, and zero otherwise.
Presence of other hedge funds	Indicator variable coded as one if at least one non-distress hedge fund is an equity holder during bankruptcy, and zero otherwise.
Secured debt	Average ratio of secured bank debt to total assets in the year before bankruptcy filing.
Number of claimants	Number of claim classes identified in the reorganization plan.
Time	Indicator variable coded as one if the bankruptcy filing date is in periods of high prevalence of bankruptcies (2000-2003 and 2009-2010), and zero otherwise.
Management compensation	The amount of management compensation granted during bankruptcy to total assets multiplied by 10^3.
HF distress return	Monthly average return over the three months before bankruptcy filing of a return index of distress-investing hedge funds.
Bond return	Monthly average return over the three months before bankruptcy filing of the S&P 500 bond returns.
Whiplash	- FSrevaluation + (Market value of assets 12 months after emergence - Successor total assets); i.e. ($v_f - v_e$) + ($v_{m,t}$ - v_e). The variable is scaled by book value of equity plus book value of debt after bankruptcy.
Operating performance post-bankruptcy	Average of the ratio of operating income to sales in the first year post-bankruptcy.
Restatement	Indicator variable coded as one if the firm reports an accounting restatement in the first year after emerging from bankruptcy due to asset valuation issues, and zero otherwise.
FS revaluation of intangibles	Indicator coded as one if the firm has fresh start adjustments for goodwill and intangibles, and zero otherwise.
Loss post-bankruptcy	Indicator variable coded as one if the firm has operating losses in the first year after emerging from bankruptcy, and zero otherwise.

Table 2 – Fresh start revaluations by main asset categories (In Million $**)**

The table reports mean and median values of main classes of assets at Chapter 11 entry (predecessor firm) and at Chapter 11 exit (fresh start value of assets of the successor firm).
The sample includes 127 firms that emerged from Chapter 11 bankruptcy and applied fresh start valuation.

		All FS revaluations				Positive FS revaluations				Negative FS revaluations			
		Predecessor	Successor	Change		Predecessor	Successor	Change		Predecessor	Successor	Change	
PPE	*Mean*	1,001.474	815.042	-186.433	**	1,063.429	1,063.701	0.272		942.379	577.859	-364.520	**
	Median	282.928	202.971	-5.315	***	189.383	203.612	0.255		334.291	196.548	-56.118	***
GW and intangibles	*Mean*	243.299	655.463	412.164	***	296.516	1,134.876	838.360	***	192.538	198.176	5.638	
	Median	24.343	104.464	1.193	***	57.850	275.554	154.400	***	4.493	0.000	0.000	
Other noncurrent assets	*Mean*	298.122	226.193	-71.929	**	151.708	178.602	26.894		437.779	271.588	-166.191	**
	Median	47.042	32.078	0.000	**	49.588	44.036	0.000		42.362	26.027	-3.107	****
Total assets	*Mean*	2,867.556	2,933.422	65.865		2,343.528	3,218.694	875.166		3,367.399	2,661.315	-706.083	
	Median	919.867	836.597	-1.388		942.487	1,192.608	185.192		912.510	719.084	-180.589	
Observations = 127													

Table 3 – Summary statistics of fresh start valuation bias

The table reports summary statistics of fresh start (FS) revaluation (assets of successor firm - assets of predecessor firm, scaled by book value of equity plus book value of debt after bankruptcy) and FS misvaluation (successor value of the firm -market value of the firm at emergence, scaled by market value of equity plus book value of debt after bankruptcy). Panel A shows statistics by type of vulture fund (VF) loan-to-own strategy and Panel B reports statistics by presence of vulture fund (Panel B). The difference in means (medians) in Panel A is tested using a two-tailed t-test (Mann-Whitney-Wilcoxon test).

Panel A: Summary statistics by vulture fund strategy

	FS revaluation ($v_e - v_f$)					FS misvaluation (v_e - $v_{m,e}$)		
	N	Mean	Median	Nr. positive	Nr. negative	N	Mean	Median
Firms in which:								
(1) VF hold LowISeniority claims	21	0.269	0.253	20	1	21	-0.076	-0.048
(2) VF hold HighISeniority claims	39	-0.196	-0.057	13	26	33	-0.093	-0.115
(3) VF hold both LowISeniority and HighISeniority claims	3	-0.188	9.000	1	2	-	-	-
Test of difference between VF strategies (1) - (2): p-value		*<0.001*	*0.004*				*0.428*	*<0.001*

Panel B: Mean and median values by vulture fund involvement

	FS revaluation ($v_e - v_f$)			FS misvaluation (v_e - $v_{m,e}$)		
	N	Mean	Median	N	Mean	Median
(1) Firms with vulture fund involvement	63	-0.040	0.009	54	-0.086	-0.094
(2) Firms without vulture fund involvement	64	-0.308	-0.013	47	-0.019	-0.009
Test of difference (1) - (2): p-value		<0.001	<0.001		0.357	0.049

Table 4 – Management compensation in bankruptcy and vulture fund involvement

The table reports summary statistics of management compensation during bankruptcy (amount of compensation to total assets multiplied by 10^3).Panel A shows statistics by vulture fund presence and Panel B reports mean values of management compensation for low and high competition among claimants. Strong competition is measured as an indicator taking the value of one if the number of voting classes is above the sample median. The difference in means (medians) is tested using a two-tailed t-test (Mann-Whitney-Wilcoxon test).

Panel A: Mean and median values by vulture fund involvement

	Management compensation in bankruptcy	
	Mean	Median
(1) Firms with vulture fund involvement	1.498	0.063
(2) Firms without vulture fund involvement	0.344	0.000
Test of difference (1) - (2): p-value	*0.006*	*<0.001*

Panel B: Management compensation and competition among claimants

	Weak competition	Strong competition	*Test of difference Strong - Weak: p-value*
Firms with vulture fund involvement	2.354	0.616	*0.020*
Firms without vulture fund involvement	0.386	0.263	*0.656*

Table 5 – Equity holdings of vulture funds at entry and exit from bankruptcy

This table compares equity holding at entry and exit from bankruptcy for vulture fund (VF) strategies. The difference in means (medians) is tested using a two-tailed *t*-test (Mann-Whitney-Wilcoxon test).

	% VF equity holdings at bankruptcy entry (A)		% VF equity holdings at bankruptcy exit (B)		*Difference in % VF equity holdings at exit and entry, (B) - (A): p-value*	
Firms in which:	Mean	Median	Mean	Median	Mean	Median
(1) VF hold LowISeniority claims	0.015	0.000	0.216	0.177	*< 0.001*	*< 0.001*
(2) VF hold HighISeniority claims	0.003	0.000	0.167	0.149	*< 0.001*	*< 0.001*
(3) VF hold both types of claims (LowI and HighI Seniority)	0.000	0.000	0.067	0.074	*0.038*	*0.098*
All firms with VF involvement (N=63)	0.007	0.000	0.179	0.157	*< 0.001*	*< 0.001*

Table 6 – Summary statistics and firm characteristics by industry

The table reports summary statistics of variables used in multivariate analyses (Panel A), and summary statistics of selected firm characteristics by industry (Panel B). The sample includes 127 firms that emerged from Chapter 11 bankruptcy and adopted fresh start accounting (for *whiplash* the number of observations is 121 and for *FS misevaluation* is 101). Variables are defined in Table 1.

Panel A: Summary statistics

	Mean	Median	St.dev.	P25	P75
Fresh Start revaluation ($v_e - v_f$)	-0.175	-0.002	1.260	-0.221	0.198
Fresh Start misvaluation (v_e - $v_{m,e}$)	-0.055	-0.047	0.365	-0.218	0.119
VF LowISeniority claims	0.189	0	0.393	0	0
VF HighISeniority claims	0.331	0	0.472	0	1
DIP financing	0.693	1	0.463	0	1
Bankruptcy duration (years)	1.185	0.889	1.193	0.369	1.622
Operating performance pre-bankruptcy	-0.144	-0.041	0.805	-0.112	0.037
Debt to assets pre-bankruptcy	0.987	0.843	0.689	0.629	1.122
Tangibility pre-bankruptcy	0.472	0	0.501	0	1
CEO time at bankruptcy (years)	3.502	1.936	4.090	0.553	5.003
Public debt	0.669	1	0.472	0	1
Presence of other hedge funds	0.535	1	0.501	0	1
Secured debt	1.433	0.952	1.826	0.711	1.360
Number of claimants	10.047	9.000	3.956	8.000	11
Time	0.591	1	0.494	0	1
Management compensation	0.917	0	2.368	0	0.561
HF distress return	1.164	1.240	0.965	0.533	1.879
Bond returns	0.630	1	0.485	0	1
Whiplash	0.095	-0.055	1.459	-0.390	0.228
Operating performance post-bankruptcy	-2.226	0.093	26.075	0.040	0.124
Restatement	0.394	0	0.491	0	1
FS revaluation of intangibles	0.512	1	0.502	0	1
Loss post-bankruptcy	0.299	0	0.460	0	1

Panel B: Mean values of selected firm characteristics by industry

	Agriculture, mining and construction N=22	Manufacturing and transportation N=67	Retail and comm.-cation N=14	Finance and other services N=24
Fresh Start revaluation ($v_e - v_f$)	-0.649	-0.113	-0.089	0.037
Fresh Start misevaluation (v_e - $v_{m,e}$)	0.036	-0.083	-0.038	-0.078
VF LowISeniority claims	0.182	0.239	0.071	0.125
VF HighISeniority claims	0.364	0.269	0.429	0.417
Restatement	0.455	0.373	0.500	0.333
Bankruptcy duration (years)	0.955	1.344	1.320	0.873
Operating performance pre-bankruptcy	-0.269	-0.164	0.008	-0.060
Debt to assets pre-bankruptcy	1.103	0.944	0.800	1.110
Public debt	0.682	0.687	0.714	0.583
Presence of other hedge funds	0.500	0.567	0.357	0.583
Number of claimants	9.773	10.075	8.857	10.917

Table 7 – Correlation matrix

The table reports Pearson correlations of variables for a sample includes of 127 firms that emerged from Chapter 11 bankruptcy and adopted fresh start accounting (for *whiplash* the number of observations is 121 and for *FS misevaluation* is 101). Variables are defined in Table 1.

		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
(1)	Fresh Start revaluation $(v_e - v_f)$	1										
(2)	Fresh Start misevaluation $(v_e - v_{m,e})$	-0.458	1									
(3)	VF LowISeniority claims	0.149	-0.030	1								
(4)	VF HighISeniority claims	-0.011	-0.045	-0.211	1							
(5)	DIP financing	0.002	0.088	0.147	-0.040	1						
(6)	Bankruptcy duration (years)	0.110	-0.133	0.139	-0.131	0.140	1					
(7)	Operating performance pre-bankruptcy	0.695	-0.433	0.045	0.087	0.085	0.010	1				
(8)	Debt to assets pre-bankruptcy	0.099	0.021	-0.042	0.037	-0.160	-0.221	0.059	1			
(9)	Tangibility pre-bankruptcy	-0.193	0.111	-0.054	0.072	-0.020	-0.096	-0.155	-0.084	1		
(10)	CEO time at bankruptcy (years)	0.012	0.054	-0.121	-0.121	0.069	-0.097	-0.005	0.099	-0.032	1	
(11)	Public debt	-0.053	0.202	0.168	-0.075	0.004	-0.122	0.016	0.186	0.196	0.076	1
(12)	Presence of other hedge funds	0.098	-0.015	0.127	0.051	-0.038	0.188	-0.013	-0.149	-0.036	-0.222	0.050
(13)	Secured debt	0.013	0.083	-0.019	-0.072	-0.122	-0.191	0.000	0.518	0.011	-0.010	0.194
(14)	Number of claimants	0.049	-0.080	0.040	0.034	-0.014	0.276	-0.110	-0.109	-0.031	0.004	0.055
(15)	Time	-0.158	0.217	-0.089	0.177	-0.173	-0.292	-0.094	0.137	0.018	0.027	0.164
(16)	Management compensation	0.042	0.008	0.132	0.158	0.160	-0.034	0.043	-0.061	-0.066	-0.057	0.056
(17)	HF distress return	0.196	-0.269	-0.024	0.027	-0.247	-0.048	0.121	0.103	-0.189	0.023	0.081
(18)	Bond returns	0.018	-0.074	0.120	-0.120	-0.157	0.115	-0.113	0.004	-0.091	0.095	-0.019
(19)	Whiplash	-0.966	0.375	-0.143	0.002	0.052	-0.101	-0.888	-0.097	0.204	0.024	0.020
(20)	Operating performance post-bankruptcy	-0.013	-0.109	0.043	0.064	-0.060	-0.129	0.003	-0.117	0.084	0.042	0.127
(21)	Restatement	0.013	-0.074	-0.019	0.222	0.012	-0.125	0.115	0.143	-0.020	0.100	0.155
(22)	FS revaluation of intangibles	0.262	-0.153	0.150	-0.218	-0.001	0.142	0.104	0.186	-0.054	0.047	0.084
(23)	Loss post-bankruptcy	-0.262	0.205	-0.140	0.052	-0.161	-0.114	-0.103	-0.063	0.208	-0.071	0.094

		(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)
(12)	Presence of other hedge funds	1											
(13)	Secured debt	-0.254	1										
(14)	Number of claimants	0.252	-0.093	1									
(15)	Time	-0.101	0.178	0.144	1								
(16)	Management compensation	-0.007	0.017	-0.129	0.161	1							
(17)	HF distress return	-0.011	0.157	0.066	-0.037	-0.193	1						
(18)	Bond returns	-0.060	0.125	0.009	0.058	-0.002	0.340	1					
(19)	Whiplash	-0.152	0.016	-0.018	0.140	-0.051	-0.174	-0.024	1				
(20)	Operating performance post-bankruptcy	-0.082	0.024	0.115	0.107	0.034	0.175	-0.068	-0.003	1			
(21)	Restatement	-0.090	0.005	0.121	0.212	0.007	0.115	0.017	0.023	-0.110	1		
(22)	FS revaluation of intangibles	-0.025	0.215	0.160	-0.076	0.114	0.178	0.132	-0.247	0.092	-0.084	1	
(23)	Loss post-bankruptcy	0.023	-0.031	0.018	0.125	-0.026	-0.102	-0.140	0.184	0.056	0.072	-0.119	1

Table 8 – Vulture fund strategies and the fresh start revaluation of the firm

The table presents estimation results for a two stage treatment model. Panel A presents coefficients and *z*-statistics (in parenthesis) from the second stage equation estimating the effect of vulture fund strategies (*VF LowISeniority claims* and *VF HighISeniority claims*) on fresh start revaluation (dependent variable is *FSrevaluation:* successor value of assets minus predecessor value of assets, i.e. $v_e - v_f$). Panel B reports coefficients and *z*-statistics from the first stage equation estimating the determinants of the vulture fund strategies. Variables are defined in Table 1. Standard errors are adjusted for group correlation at the year level. The symbol *,**, and *** indicate statistical significance at the 10%, 5%, and 1% levels respectively.

Panel A: The effect on fresh start revaluation: $v_e - v_f$ (second-stage equation)

	(1)	(2)	(3)	(4)
VF LowISeniority claims	1.874***	1.744***		
	(6.151)	(3.620)		
VF HighSeniority claims			-1.434***	-1.414***
			(-5.191)	(-6.058)
DIP financing	0.069	0.035	0.092	0.103
	(0.203)	(0.089)	(0.516)	(0.557)
Bankruptcy duration	-0.003	0.050	0.071***	0.083***
	(-0.059)	(0.663)	(4.070)	(6.666)
Operating performance pre-bankruptcy	0.977	1.060	1.172*	1.167*
	(1.517)	(1.555)	(1.889)	(1.873)
Debt to assets pre-bankruptcy	0.215***	0.242**	0.299***	0.300***
	(2.959)	(2.300)	(17.665)	(11.713)
Tangibility pre-bankruptcy	0.009	-0.002	0.033	0.041*
	(0.071)	(-0.021)	(1.096)	(1.661)
CEO time at bankruptcy	0.005	0.024	-0.006	-0.003
	(0.407)	(1.052)	(-0.121)	(-0.066)
Public debt	-0.483***	-0.526**	-0.376*	-0.355*
	(-2.960)	(-2.385)	(-1.863)	(-1.777)
Presence of other hedge funds	0.122	0.118	0.312**	0.298**
	(0.844)	(0.736)	(2.476)	(2.301)
Secured debt	0.014	0.017	-0.019	-0.015
	(0.826)	(0.543)	(-1.240)	(-1.260)
Number of claimants	0.034***	0.037**	0.040*	0.043*
	(2.651)	(2.535)	(1.721)	(1.860)
Time	-0.105	-0.119	0.056	-0.018
	(-0.359)	(-0.953)	(0.318)	(-0.169)
Management compensation		0.010		0.028**
		(0.574)		(2.168)
Managt. compensation * VFLowISeniority		0.0623**		
		(2.041)		
Managt. compensation * VF HighSeniority				-0.023*
				(-1.678)
Constant	-1.661***	-1.173***	-0.595***	-0.708***
	(-3.995)	(-5.394)	(-3.254)	(-3.671)
Observations	127	127	127	127
Wald test of indep. equations (ρ=0): Chi2	13.246***	4.022**	14.970***	20.172***

Table 8 – Vulture fund strategies and the fresh start revaluation of the firm (cont.)

Panel B: Determinants of vulture fund strategy (first-stage equation)

	(1)	(2)	(3)	(4)
Operating performance pre-bankruptcy	0.636	0.645	1.155*	1.154*
	(1.074)	(1.100)	(1.742)	(1.735)
Debt to assets pre-bankruptcy	-0.170***	-0.167**	0.224***	0.231***
	(-3.697)	(-2.490)	(27.213)	(17.399)
Tangibility pre-bankruptcy	-0.154	-0.182	0.434***	0.394***
	(-0.594)	(-0.799)	(7.840)	(11.051)
CEO time at bankruptcy	-0.132***	-0.122**	0.002	0.000
	(-2.622)	(-1.971)	(0.039)	(0.009)
Public debt	0.878***	0.803***	-0.444***	-0.411***
	(3.856)	(3.086)	(-5.785)	(-4.375)
Presence of other hedge funds	0.171	0.201	0.465**	0.465***
	(1.088)	(1.276)	(2.473)	(2.893)
Secured debt	0.016	-0.007	-0.094***	-0.103***
	(0.405)	(-0.252)	(-4.113)	(-4.754)
Number of claimants	-0.023*	-0.025**	0.046	0.042
	(-1.694)	(-2.072)	(1.461)	(1.446)
Time	-0.196	-0.173	0.569***	0.520***
	(-0.631)	(-0.547)	(3.684)	(8.101)
HF distress return	0.127	0.113	0.032	0.018
	(0.936)	(0.533)	(1.109)	(0.486)
Bond return	0.762***	0.777***	-0.250*	-0.220**
	(6.235)	(3.351)	(-1.873)	(-1.988)
constant	-0.655	-0.615	-1.146***	-1.068***
	(-1.368)	(-0.972)	(-2.680)	(-3.366)
Observations	127	127	127	127

Table 9 - Vulture fund strategies and the fresh start misvaluation $v_e - v_{m,e}$ (second-stage equation)

The table presents results for the second stage equation of a two stage treatment model estimating the effect of vulture fund strategies (*VF LowISeniority claims* and *VF HighISeniority claims*) on fresh start misevaluation (dependent variable is *FSmisvaluation:* successor value of assets minus market value of assets at emergence, i.e. $v_e - v_{m,e}$). Variables are defined in Table 1. Standard errors (in parenthesis) are adjusted for group correlation at the year level. The symbol *,**, and *** indicate statistical significance at the 10%, 5%, and 1% levels respectively.

	(1)	(2)	(3)	(4)
VF LowISeniority claims	0.264***	0.282*		
	(3.017)	(1.812)		
VF HighSeniority claims			-0.691***	-0.682***
			(-9.603)	(-6.089)
DIP financing	0.078	0.065	0.028	0.037
	(0.593)	(0.447)	(0.461)	(0.610)
Bankruptcy duration	0.019	0.002	-0.003	-0.002
	(1.379)	(0.138)	(-0.122)	(-0.106)
Operating performance pre-bankruptcy	-0.185***	-0.213***	-0.177***	-0.176***
	(-5.780)	(-5.439)	(-12.681)	(-11.023)
Debt to assets pre-bankruptcy	0.006	0.009	0.061*	0.056*
	(0.119)	(0.134)	(1.835)	(1.866)
Tangibility pre-bankruptcy	0.094*	0.089***	0.080***	0.082***
	(1.722)	(4.191)	(42.015)	(12.853)
CEO time at bankruptcy	0.034	0.027	0.014	0.012
	(1.484)	(1.113)	(1.021)	(0.904)
Public debt	0.057	0.049	0.098***	0.102***
	(0.830)	(0.558)	(7.087)	(7.588)
Presence of other hedge funds	0.052	0.053	0.006	0.009
	(0.936)	(0.761)	(0.137)	(0.175)
Secured debt	0.015	0.012	-0.015	-0.012
	(0.512)	(0.291)	(-0.391)	(-0.344)
Number of claimants	-0.010***	-0.009***	-0.004	-0.005
	(-2.927)	(-5.857)	(-0.523)	(-0.597)
Time	0.154***	0.155***	-0.004	-0.007
	(3.521)	(3.287)	(-0.201)	(-0.261)
Management compensation		0.005		0.008***
		(0.387)		(40.180)
Managt. compensation * VF LowISeniority		-0.013		
		(-0.166)		
Managt .compensation * VF HighSeniority				-0.015***
				(-2.660)
Constant	-0.421***	-0.501***	-0.022	-0.018
	(-15.777)	(-6.281)	(-0.101)	(-0.106)
Observations	101	101	101	101
Wald test of indep. equations (ρ=0): Chi2	3.869**	3.686**	379.507**	48.924***

Table 10 – Market reversal of fresh start revaluation post-bankruptcy – the whiplash effect

The table presents estimation results for a two stage treatment model (second stage equation). The coefficients and *z*-statistics are from estimating the effect of vulture fund strategies (*VF LowISeniority claims* and *VF HighISeniority claims*) on market reversals of fresh start revaluation 12 months after exit from Chapter 11 (dependent variable is *Whiplash*: - FSrevaluation + (MV of assets 12 months after emergence - successor value of assets); i.e. ($v_f - v_e$) + ($v_{m,t} - v_e$)). Variables are defined in Table 1. Standard errors are adjusted for group correlation at the year level. The symbol *,**, and *** indicate statistical significance at the 10%, 5%, and 1% levels respectively.

	(1)	(2)
VF LowISeniority claims	-0.377***	
	(-3.398)	
VF HighSeniority claims		0.518***
		(4.247)
DIP financing	-0.003	-0.012
	(-0.052)	(-0.433)
Bankruptcy duration	-0.157*	-0.136
	(-1.652)	(-1.358)
Operating performance pre-bankruptcy	-0.547	-0.484
	(-1.353)	(-1.349)
Debt to assets pre-bankruptcy	-0.032	-0.000
	(-0.636)	(-0.005)
Tangibility pre-bankruptcy	0.299*	0.258***
	(1.814)	(2.644)
CEO time at bankruptcy	-0.069*	-0.079**
	(-1.860)	(-2.558)
Public debt	-0.292**	-0.311**
	(-2.214)	(-2.375)
Presence of other hedge funds	-0.058	-0.142
	(-0.221)	(-0.602)
Secured debt	-0.007	-0.122***
	(-0.203)	(-5.358)
Number of claimants	0.039***	0.042***
	(4.176)	(3.947)
Time	0.810***	0.698***
	(6.526)	(5.012)
Operating performance post-bankruptcy	0.097	0.428
	(0.157)	(0.935)
Constant	0.041	-0.932
	(0.036)	(-1.026)
Observations	121	121
Wald test of indep. equations (ρ=0): Chi2	6.292**	3.777**

Table 11 - Post-bankruptcy accounting restatements

The table presents estimation results for a two stage treatment model (second stage equation). The coefficients and *z*-statistics are from estimating the effect of vulture fund strategies (*VF LowISeniority claims* and *VF HighISeniority claims*) on accounting restatements (dependent variable is *Restatement*: indicator variable coded as one if the firm reports an accounting restatement due to asset valuation in the first year after bankruptcy, and zero otherwise). Variables are defined in Table 1. Standard errors are adjusted for group correlation at the year level. The symbol *,**, and *** indicate statistical significance at the 10%, 5%, and 1% levels respectively.

	(1)	(2)
VF LowISeniority claims	-0.223	
	(-1.593)	
VF HighSeniority claims		0.286***
		(6.426)
DIP financing	-0.002	0.011
	(-0.013)	(0.088)
Bankruptcy duration	-0.055	-0.016
	(-0.638)	(-0.331)
Operating performance pre-bankruptcy	-0.190	-0.061
	(-0.601)	(-0.222)
Debt to assets pre-bankruptcy	0.125	0.083
	(1.599)	(1.079)
Tangibility pre-bankruptcy	0.015	-0.060
	(0.127)	(-0.499)
CEO time at bankruptcy	-0.002	-0.008
	(-0.051)	(-0.561)
Public debt	0.194	0.324***
	(1.139)	(3.044)
Presence of other hedge funds	-0.228	-0.228***
	(-1.643)	(-2.987)
Secured debt	-0.123***	-0.154***
	(-3.383)	(-5.473)
Number of claimants	0.006	0.019
	(0.298)	(0.974)
Time	0.133**	0.262***
	(2.061)	(5.635)
FS revaluation of intangibles	0.123	0.203***
	(0.897)	(3.496)
Loss post-bankruptcy	-0.083	-0.091
	(-0.575)	(-0.330)
Constant	-0.143	-0.345**
	(-0.218)	(-2.052)
Observations	127	127
Wald test of indep. equations (ρ=0):Chi2	1.496	3.398**

Internet Appendix

Fresh start revaluation and vulture fund strategies by type of asset (second equation)

The table presents estimation results for a two stage treatment model. Panel A presents coefficients and *z*-statistics (in parenthesis) from the second stage equation estimating the effect of vulture fund strategies (*VF LowISeniority claims* and *VF HighISeniority claims*) on fresh start revaluation for main types of assets (PPE – plant property and equipment, GW&I – goodwill and intangibles, ONCA – other non-current assets). Variables are defined in Table 1 of the paper. Standard errors are adjusted for group correlation at the year level. The symbol *,**, and *** indicate statistical significance at the 10%, 5%, and 1% levels respectively.

	FS rev. PPE	FS rev. PPE	FS rev. GW&I.	FS rev. GW&I	FS rev. ONCA	FS rev. ONCA
	(1)	(2)	(3)	(4)	(5)	(6)
VF LowISeniority claims	0.846***		0.243**		0.512***	
	(4.362)		(2.031)		(5.717)	
VF HighSeniority claims		-0.754***		-0.477***		-0.476***
		(-5.201)		(-3.540)		(-6.316)
DIP financing	0.012	0.007	-0.031*	-0.002	-0.097	-0.040
	(0.069)	(0.085)	(-1.722)	(-0.037)	(-1.099)	(-0.701)
Bankruptcy duration	0.030*	0.039***	0.032**	0.025***	0.001	0.018
	(1.657)	(6.841)	(2.118)	(2.648)	(0.013)	(0.848)
Operating performance pre-bankruptcy	0.508	0.595**	0.000	0.039***	0.343	0.396*
	(1.567)	(2.037)	(0.008)	(2.670)	(1.579)	(1.894)
Debt to assets pre-bankruptcy	0.067	0.103***	0.124***	0.161***	0.009	0.042**
	(1.209)	(9.056)	(8.029)	(16.006)	(0.609)	(2.351)
Tangibility pre-bankruptcy	-0.059	-0.036	0.019	0.061***	0.025	0.043
	(-1.027)	(-1.381)	(0.369)	(2.643)	(1.108)	(1.461)
CEO time at bankruptcy	-0.019**	-0.028	0.003	-0.005	0.011	0.005
	(-2.112)	(-1.213)	(0.492)	(-0.402)	(1.122)	(0.430)
Public debt	-0.298**	-0.248*	-0.025	-0.049	-0.105***	-0.080
	(-2.183)	(-1.795)	(-0.638)	(-1.262)	(-3.207)	(-1.565)
Presence of other hedge funds	0.055	0.138***	-0.028	0.011	0.041	0.096
	(0.978)	(4.791)	(-0.932)	(0.592)	(0.632)	(1.566)
Secured debt	0.018**	-0.000	0.003	-0.009*	-0.008	-0.017***
	(1.994)	(-0.023)	(0.807)	(-1.904)	(-1.270)	(-3.218)
Number of claimants	0.015**	0.021	-0.000	0.002	0.010***	0.013**
	(2.574)	(1.283)	(-0.040)	(0.493)	(3.349)	(2.498)
Time	0.008	0.035	0.001	0.061	-0.005	0.005
	(0.347)	(0.872)	(0.011)	(1.300)	(-0.113)	(0.246)
Constant	-0.974**	-0.355***	-0.216	0.044	-0.626	-0.334
	(-2.460)	(-4.347)	(-1.568)	(0.170)	(-1.564)	(-1.479)
Observations	127	127	127	127	127	127
Wald test of indep. Eqs. (ρ=0) Chi2	33.801***	136.257***	0.506	3.896***	47.189***	85.084***